

MAGNETIC BEARING APPARATUS

ABSTRACT OF THE DISCLOSURE

There is provided a magnetic bearing apparatus having no necessity of providing a magnetic flux sensor in the vicinity of a supporting electromagnet and no necessity of increasing the number of signal lines in a cable and capable of achieving an advantage similar to a conventional magnet flux feedback type power amplifier in a controller. The magnetic bearing apparatus for supporting a supported member by a magnetic force without contact comprises a current sensor (11) for detecting a control current output from a power amplifier (7) and a displacement sensor (10) for detecting a displacement of the supported member (1). A control current detection signal  $S_i$  of the current sensor (11) and a displacement detection signal  $S_g$  of the displacement sensor (10) are supplied to an estimator (20) that estimates a magnetic flux or magnetic flux density generated between a surface of the electromagnet (4) and an electromagnetic target (3) on the supported member (1). An estimated value is fed back from the estimator (20) to the power amplifier (7) that supplies a control current  $i$  to an electromagnetic coil (6).